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## The design of an empirical cross-boundary collaborative open learning framework

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### Abstract

This paper reports on the design and development of an empirical cross-boundary, collaborative open learning framework for cross-institutional academic development. The framework is one of the key outputs of a phenomenographic study into the lived experience of open learners in two open cross-institutional courses. Data was collected through individual interviews from 22 study participants from two courses that made up a collective case study. These courses were offered by UK higher education institutions in collaboration with informal partners nationally and internationally and were selected as these had different collaborative learning features built-in that could be explored. Course participants in these two courses include academic staff who teach or support learning and further open learners. The empirical design framework is proposed to support the development and implementation of cross-boundary collaborative open learning approaches within cross-institutional academic development and may also be useful in further learning and teaching settings in higher education.

**Keywords:** Open education, academic development, collaborative open learning, boundary crossing, design framework, phenomenography

### Introduction

This study is in an emerging area of open education where relatively little evidence-based research is available linked to academic development. It therefore presents an alternative academic development proposition.

Learning is generally becoming more collaborative and informalised (Redecker et al., 2011) and the boundaries between formal and informal learning are blurring (Conole, 2013). This realisation, together with the call for more openness and cross-institutional collaboration, formal and informal, among Higher Education Institutions and practitioners in the area of teaching and academic development (British Council, 2015; European Commission, 2013, 2015; HEFCE, 2011; Inamorato dos Santos, Punie & Castaño-Muñoz, 2016) to enhance the quality of teaching based on collaboration among institutions and collaborative learning, were important drivers for this study.

The literature, specifically in the context of academic development in the UK, highlights the need for more outward-facing (Crawford, 2009), technology-supported academic development (Pickford & Brown, 2013) following collaborative and open approaches that stretch beyond institutional boundaries and engage academic staff in CPD to enhance teaching practice and the student learning experience. Nevertheless, open cross-institutional academic development is still currently in an embryonic state. The modelling of such practice, supported by technologies and fostering opportunities to engage as learners, has the potential to better prepare staff to harness these technologies and practices in their own teaching (Bates & Sangra, 2011; Donnelly, 2010; Littlejohn, 2002). Stefani (2017) highlights the need for academic development to become transformative and shake up practices.

The literature indicates that design frameworks and models can shape positively collaborative learning enabled and supported by digital technology (Conole, Galley & Culver, 2011; Mayes & de Freitas, 2013; Reeves & Reeves, 1997). Therefore, a review of range of well-known and widely used theoretical and evidence-based design frameworks that support teaching using digital technologies with collaborative learning features was conducted. The frameworks reviewed were mainly from the higher education context. This helped to identify what is already available and in use that could also be of relevance for this study.

The frameworks reviewed included among others, the 5-stage e-tivities (Salmon, 2000; 2013) also appropriated as the 5-stage framework for online e-groups (Jaques & Salmon, 2007), the 3E Approach/Framework (Smyth, Comrie, Gray & Mayes, 2010), Communities of Practice (Lave & Wenger, 1991) and the Community of Inquiry (Garrison, Anderson & Archer, 2000). These and further frameworks reviewed (see Nerantzi, 2017) discuss scaffolding strategies to enable and promote learner interaction and active engagement. In some cases, collaborative learning is explored in a variety of settings from blended, technology-supported and fully online provision, in formal or informal educational settings, as well as in Massive Open Online Courses and Open Educational Practices.

The reviewed frameworks highlight the importance of facilitator support, the community, the activities, and the choice between learning on one's own or with others. However, none of the frameworks reviewed was designed with a primary focus on fostering collaborative open learning in cross-institutional academic development settings. The closest approach to the current study was the 10 Dimensions of Open Education framework (Inamorato dos Santos, Punie & Castaño-Muñoz, 2016). This framework has been designed to support the implementation of open education at institutional level enabled among others through collaborative learning and cross-institutional collaboration. However, this framework does not provide specific pedagogical approaches that enable and foster collaborative open learning.

The review of frameworks demonstrated that new design frameworks are needed to respond to the fast pace of change in HE, to model innovative practices in academic development and maximise on the potential open and social practices present in this area for staff and students.

## **The study: methodology, data collection and findings**

This paper reports on the design of the cross-boundary collaborative open learning framework, a key output of an empirical study in which the authentic lived collaborative open learning experience in cross-institutional academic development settings was explored.

Phenomenography was the methodology used as the study aimed to explore the lived experience of study participants collectively and its qualitatively different variations in authentic settings in (Marton, 1981). It is a relatively new methodology especially developed for pedagogic research in higher education that is increasingly used to study the student and staff experience (Nerantzi, 2017). Booth (1997) highlights that the results of phenomenographic research are valuable to inform practice. Something that was intended with this study. Through a collective case study approach (Stake, 1995), experiences across two distinct open cross-institutional courses were explored. These were the open courses *Flexible, Distant and Open Learning* (case study 1: FDOL) and *Creativity for Learning* (case study 2: #creativeHE). Both are institutional modules at Masters level at universities in the United Kingdom with collaborative learning features offered through social media technologies, supported by distributed facilitators. An overview of the case studies with the specific collaborative learning features can be found in Appendix 1.

In total, 22 study participants who were learners in either of the two courses of the collective case study were interviewed remotely through individual semi-structured interviews (11 from case study 1 and 11 from case study 2). The study participants were from different higher education institutions and other sectors, from a range of disciplines and professional areas and different countries and did include some students. Most study participants were highly qualified with at least a Master's qualification. The transcripts of these individual interviews collectively formed the phenomenographic data that was analysed through an iterative process as described by Marton (1981) through which the categories of descriptions emerged. Bracketing strategies such as keeping a reflective diary during the analysis and sharing the transcripts and the findings with study participants, were used to reduce and minimise data contamination by the author, suspend judgement and provide transparency to the process were employed as the researcher in phenomenography is not part of the study (Adawi, Berglund, Booth & Ingerman, 2001; Sin, 2010).

There were 11 categories of description in total organised in three pools of meaning: course, boundary crossing and collaboration. The categories of description included there are the findings of the phenomenographic study as reported in Appendix 2. The categories of description were synthesised into the outcome space. This depicts the logical relationships among the categories of description and is regarded as the final stage of the analysis in a phenomenographic study. The outcome space has been included in Appendix 3.

## The Framework

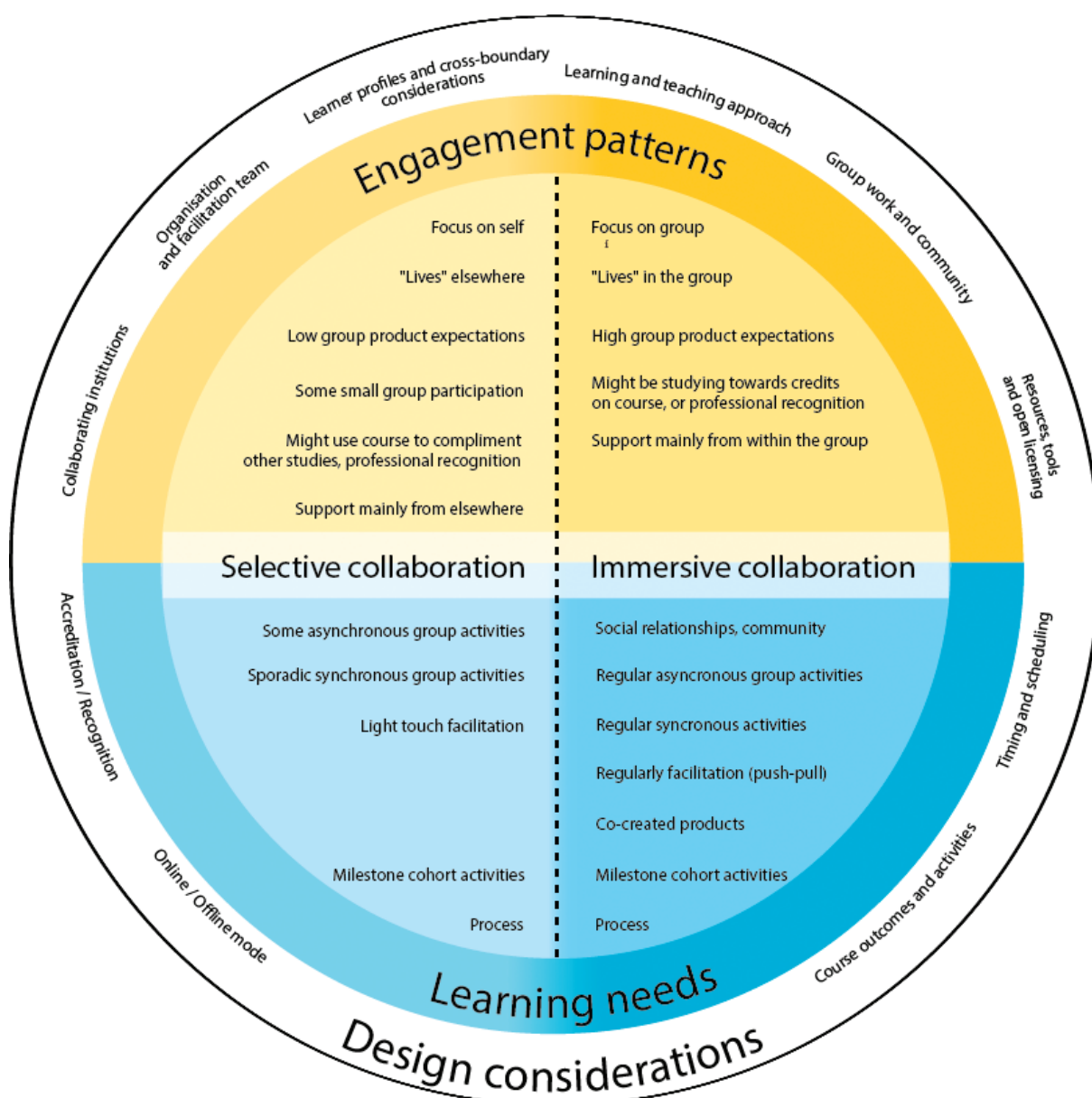
The framework is a dynamic design tool for academic developers, through which key characteristics of collaborative open learning as a learner choice in cross-institutional courses have been identified and synthesised. This empirical design framework is a direct output from the phenomenographic findings, the categories of description (Appendix 2), the outcome space, the final output of a phenomenographic study (Appendix 3) and a discussion of relevant literature (Nerantzi, 2017) and is intended to be used as a design tool.

While boundary crossing was introduced originally in an attempt to explain what professionals experience at work that is unfamiliar and individuals feel unqualified to deal with it (Suchman, 1994), Akkerman and Bakker (2011, p.132) state that "all learning involves boundaries" and crossing them. They claim that the increase in specialisation in professions is leading to the increase of boundaries and potential fragmentation. They emphasise that it is therefore important for education to create opportunities for boundary-crossing as this will bring continuity and diversity within and beyond a higher education institution.

Boundary crossing was a key characteristic that emerged through the analysis and synthesis of the phenomenographic findings and is reflected particularly in four categories of description that define boundary crossing in the context of this study. These categories are modes of participation; time, places and space; culture and language; diverse professional contexts. How these categories and the qualitatively different variations relating to these were experienced by study participants, can be found in Appendix 2.

The empirical design framework will require contextualisation and adaption before application. It has not been used in practice.

The framework consists of the following three dimensions: Engagement patterns, learning needs and design considerations. Figure 1 is a visualisation of the framework and a quick reference guide intended to be used for designers. All features presented in this are described in more detail in the following sections.



**Figure 1:** Framework for cross-boundary collaborative open learning

## Engagement patterns

The engagement patterns included in the framework associated with collaborative open learning are, 'selective collaboration' and 'immersive collaboration'. They are well supported in the phenomenographic outcomes and reflect the category of description 'collaboration as engagement in learning' as depicted in the outcome space in Area B: Lived experience (Appendix 3). These two engagement patterns provide insights into the learners' activity and behaviour in the context of the collective case study.

The qualitatively different variations are captured in Figure 1. The results indicate that the engagement patterns are dynamic. This means that learners may move between these two identified patterns.



The level of learners' engagement with others, and their participation in asynchronous or synchronous group and course activities and associated support strategies will vary. Furthermore, learners can behave differently online and offline. For example, a learner may seem to be a 'selectively' collaborating online within the course, but offline in a local setting, he or she may be part of an 'immersive collaboration' enjoying the benefits of an existing trusted community. When organising groups and collaborative open learning, it is important to take these different engagement patterns into consideration as they will affect group work and there may be tensions especially between 'selective collaboration' and 'immersive collaboration'. Making learners in groups aware of these issues and monitoring engagement patterns could be considered as a way of reducing potential challenges and misunderstandings among group members.

The engagement patterns, depend on personal circumstances, interests, preferences, challenges and constraints and these can all change. This is consistent with White and Le Cornu's (2011) Visitors and Residents Typology. As some learners can be less visibly engaged with others online in the course, it needs to be acknowledged that these individuals, especially when adopting 'selective collaboration' can have other support, engagement and collaboration strategies in place which sit outside the course. These could be other online communities or offline formalised or informal support networks or communities as the findings of this indicated. Such information can be included in the learner profiles kept and shared by learners in an online space related to the course.

Providing clear course guidelines for learners is important, as is having facilitators who are engaged where needed. Proposed support measures can be found in the framework under design considerations, and these have been shown to lead, progressively, to learner autonomy.

## Learning needs

The learning needs (Figure 1) of participants also differ across the two distinct engagement patterns, 'selective collaboration' and 'immersive collaboration'.

The learning needs dimension of the framework is a guide for academic developers, course designers and facilitators to design and facilitate collaborative open learning and provide engagement activities that may be appropriate depending on particular engagement patterns.

Figure 1 shows the needs linked to the corresponding engagement pattern. The learning needs are aimed at providing a guide for academic developers during the design stages of a course to help them develop appropriate activities that will be suitable for each need. This will potentially increase the engagement in collaborative open learning and in learning more generally. Furthermore, these activities can also be useful for facilitators to adjust support strategies in collaborative open learning. They may also help learners identify ways to engage in a course depending on their circumstances, or the engagement pattern.

As learning needs are linked to the corresponding engagement patterns it is recommended that academic developers make clear from the outset what level of commitment is required from learners for each pattern. This is especially important for those learners who intend to engage in collaborative open learning in supported groups, and to clarify the nature of the work involved. Learners can be asked to identify which engagement pattern would be more appropriate for them, depending on their circumstances at a specific moment in time. This could help them manage their engagement more effectively and realistically depending on their circumstances. However, there is an adverse potential for a learner to 'lock themselves in' to an engagement pattern and then become less open to change. Being aware of learners' needs may help facilitators and learners to reduce potential challenges experienced in collaborative open learning in groups, especially where a higher level of commitment to others is required or expected.

## Design considerations

The design considerations are course characteristics that foster collaborative open learning. They emerged from the phenomenographic study and are presented below.

### *Collaborating institutions*

Collaboration between institutions in this study was informal and practitioner-led. It was conducted without formal cross-institutional agreements. This approach is in line with what M. Weller (2011) defines as 'little OER' and Rennie and Reynold (2014) as 'Bottom-up OER'. Practitioner-led cross-institutional initiatives could also be formalised through cross-institutional agreements and therefore be turned into 'Big OER'. Such a step can have implications for the flexibility, quality and sustainability of the initiative and therefore further research is needed in this area.

In order to find collaborators, an academic developer or course designer first needs to identify individuals in at least one other HEI who would be interested in such a collaboration. Individuals from an HEI in another country can be considered for greater diversity.

### *Organisation and facilitation team*

A team approach to organisation and facilitation among collaborators from different institutions was used in both courses of this study. The outcomes linked to facilitation and the distributed team approach suggest that this had a beneficial effect on participants' engagement in collaborative open learning, and reduced some of the 'top-down' managerial perceptions around academic development (Di Napoli, 2014). Therefore, it is suggested that a distributed and collaborative approach should be considered as it could alleviate potentially negative perceptions of academic development.

Collaborators need to agree on the details of the course, such as its organisation including the structure, scheduling, approaches, and activities, as well as define and agree an appropriate evaluation strategy.

The role that facilitation has played in this framework suggests its importance in OEP in the context of academic development, and the difference it can make for collaborative open learning in these settings. A supportive environment where facilitators are present and engaged, and in which they are co-learners, builds confidence among learners and reduces their anxiety around contributing. The study also indicates that facilitators play an important role in overcoming challenges related to technology and language for example, and that facilitation should therefore be acknowledged as an important aspect of OEP.

On the matter of defining a course language, even if collaborators originate from the same country, open learners may still be from a wider range of countries with different first languages and varying levels of competencies in the course language. As this study has shown, a defined language can therefore be a barrier for some to participate in collaborative open learning. It is important to acknowledge this and identify strategies to help learners overcome or minimise any barriers from the outset. Language learning resources or a buddy system for example, could be considered. S. Weller's (2011) work points to a general lack of familiarity with educational research language among academic staff in other disciplines. Facilitation can also contribute positively to this.

### *Resources and tools*

A range of resources, social media and digital tools for collaborative open learning were used in the two courses studied. The outcomes suggest the importance of using media-rich resources

alongside text-based resources as they provided varied and flexible engagement opportunities. These supported participants' learning, especially where English was not the first language, there were learning difficulties or time issues.

While the social media and digital tools used presented initial technological challenges for some participants, these were overcome with peer and facilitator support. These outcomes seem to be consistent with the idea that social media is a vehicle for open learning (Weller, 2014).

Challenges are especially acute during the initial stages of a course when learners first encounter the resources and tools. Providing clear guidelines that help learners familiarise themselves with these, and which help them navigate through the course, is important for developing confidence in learners.

Further challenges for collaboration would be expected due to varying levels of proficiency in the defined course language due to the openness of the provision, as discussed in the organisation and facilitation team section above.

Finally, making all course areas and resources available from the outset of the course and after course completion increases and extends flexible engagement, since, as the study suggests, learners engage in different ways with the course.

### **Formal / Informal learning & Accreditation / Recognition**

Conole (2013) has noted that the blending of formal and informal learning has started happening in HE. Examples of this in practice are the two courses of this study. Formal and informal learning opportunities were part of the design due to its open nature. Courses were linked to formal institutional modules in at least one of the participating institutions. This enabled the bringing together of formal and informal learners in a cross-institutional academic development context. This blending or blurring of modes of participation had a positive impact on collaborative open learning for both informal and formal learners in the two courses of this study, and was often seen as motivational.

Furthermore, this study shows that the opportunities for accreditation and recognition presented by the courses became increasingly important for some participants due to their level of engagement in these. While informal recognition, in the form of a certificate, badge or other notification of participation was seen as appropriate for some, other participants, were interested in how they could use the course towards gaining academic credits, a qualification or a professional recognition. Some participants had the opportunity to use the course to complement their studies elsewhere or work towards recognition external to the course. Further research in this area is required to establish how informal and open learning in the context of academic development can be recognised.

Johnson et al. (2016) state that there are associated opportunities for HE brought about by the blending of formal and informal learning, especially around the role of informal learning for formal learning and qualifications. The outcomes around recognition and accreditation in this study suggest that there is value in bringing together formal and informal learning in the context of academic development. If the provision is part of an existing academic programme that has been opened-up, it will already have in place accreditation and recognition strategies and related summative assessment for learners who are interested in working towards recognition or academic credits. However, the outcomes point towards the need to identify pathways that lead to academic credits or recognition, especially for open learners, as the certificates and open badges may not be appropriate or desirable in all cases.

This study indicates that it may be appropriate that any formal opportunities for accreditation or recognition are dealt with at institutional level and not cross-institutionally, because in a practitioner-led collaboration there will be no formal agreements in place. Even if there were, a joint recognition



or accreditation process for open learners would add a layer of complexity which may not be helpful when designing, and offering open courses of this nature. Research in this area will provide related insights to inform practice.

### *Learner profiles and cross-boundary considerations*

Open provision without prerequisites increases diversity and cross-boundary representation of learners as this study suggested. Such courses have the potential to attract academic staff and students from other institutions from the same and other countries and cultures, as well as individuals from outside HE. This study takes Perryman's and Coughlan's (2013; 2014) informal academic and public subject communities using social media, and shows that such cross-boundary communities can also work when bringing together formal and informal learning of academic staff, students and the public in an academic development context. Such practices add another dimension to the diversity of learners.

Knowing who the learners are and their expectations is important for facilitators to support participants in collaborative open learning. The information that provides insights into the demographics of learners as well as their intended engagement patterns and details regarding any existing additional and/or external support in place, could be shared with facilitators and peers in the course, with learner's consent, especially as generally less information will be available for open learners compared with learners who will be registered from a particular institution. The creation and use of learner profile spaces could be considered for gathering relevant information about collaborative open learners that will be useful for facilitators and peers during the course and should be constructed following data protection guidelines. Alternatively, reflective individual, group portfolios or group resumes could provide this information when shared with others on the course.

### *Learning and teaching approach*

This study has shown that inquiry-based learning and teaching approaches engage learners in a meaningful and critical way, enabling contextualisation. Many participants enjoyed and valued learning through inquiry especially as this enabled them to link learning to their own practice.

Overall, it is recommended that flexibility and choice are built into the teaching approach, so that it is not overly structured and predefined, and gives facilitators and learners freedom to make learning suit their needs. This study suggests that when open learners take ownership of the learning process, this may translate into increased engagement.

### *Group work and community*

Learning in facilitated small groups was an option in the courses of this study. There were additional options for learners to learn on their own or with others in the course community. These arrangements added flexibility for learners to engage.

This study suggests that supported small groups have a positive impact on engagement. The results also point towards an increased interest in collaborative open learning when the group members, and the voices and perspectives they expressed, were diverse. Therefore, when creating groups, mixing learners from different institutions, backgrounds, roles and cultures is recommended as it will increase diversity and might influence individual engagement patterns. The development of strategies for group formation that foster cross-boundary collaborative open learning can assist in achieving this. Some learners might need more support than others and time is needed to form groups. These requirements should be recognised and built into the course.

Perceptions of facilitation in this study and especially the sometimes directive and controlling aspect of it, indicate that it is important to create a scaffold that will lead to group autonomy as time progresses. This would help learners get the maximum out of collaborative open learning and open learning more generally. The approach adopted for collaborative open learning needs to be owned by the group members. In addition, while it is often desirable in collaborative learning to produce a group output, this study indicates that this can be problematic, since engagement fluctuates and individual priorities can be conflicting. Therefore, the suggestion is to consider approaches that focus more on the process of collaborative open learning.

Scheduling when the group gets together is important and will help group members get to know each other which, in turn, will have an impact on their interaction and learning within the group. In particular, using synchronous video links where individuals can see each other, can create a sense of belonging among group members and enable them to learn together in real time. Creating opportunities for learners to be part of a community within a group as well as at a course level is an important design consideration identified through and in the literature (Kear, 2011). A community enables 'immersive collaboration' and 'selective collaboration', as well as 'individual learning'. This happens if or when learners want depending on their personal circumstances and preferences.

### **Online / offline mode**

The mode of engagement provided insights into where participants experienced collaborative open learning and how they engaged more generally in the open course.

The potential offline learning in an open course is often not acknowledged (Wall, 2015). The outcomes especially around 'cross-boundary learning through time, places and space' provided an insight into the role offline learning played for some participants and their learning. They indicate that offline was often preferred or at least complimentary to online and mobile learning as it enabled participants to engage differently and be supported locally. The knowledge that learners engage in offline activities could provide a possible explanation of why some participants might be less visible online within groups and the course more generally. This information can help manage group expectations and collaborative open learning. It is recommended that academic developers, course designers and facilitators take online and offline modes of engagement into consideration when planning, designing and supporting collaborative open learning in cross-institutional academic development courses, even if such information is not known.

### **Course outcomes and activities**

The courses of this study had broad outcomes, which were accompanied by a range of various learning activities. These could be used in groups or individually. Peers and tutors commented on contributions and learners were encouraged to personalise the learning outcomes.

Structuring the course based on broad learning outcomes and offering a small set of activities linked to course themes that can be used and adapted individually or collaboratively, online or offline, was seen as beneficial for participants especially as time for engagement was often an issue. Keeping instructions for activities short and clear is therefore recommended.

Furthermore, designing activities that are inquiry-based and which can be contextualised and completed in a variety of media enables alternative forms of engagement. The use of video for reflection is such an example. Using a wide range of media is important for a number of reasons, including: the possible engagement difficulties that some learners will encounter because of

language barriers; learning difficulties; time constraints; and personal preferences. This study shows that media-rich approaches work well and learners enjoy sharing and commenting on each other's contributions.

### ***Timing and Scheduling***

The nature of collaborative open learning is shaped by the duration of the course. In courses that stretch over a longer period of time there is more time available to develop learning relationships in groups, which is important especially for 'immersive collaboration'.

Scheduling synchronous and asynchronous activities for all learners and at group level early on in the course and throughout is important as this helps learners manage their time from the outset. Qualitatively different engagement patterns were identified through this study that provide insights into different behaviours as well as needs. Providing guidelines for required study time per day or week depending on the length of the course should also be considered. Furthermore, this study indicates that some participants wanted to keep in touch with peers after the course had been completed and to feel part of a community. Providing extended engagement opportunities beyond the course duration can be beneficial and should be designed-in from the beginning.

### **Recommendations for specific groups**

This empirical design framework has shown that collaborative open learning can be powerful for engaging academic staff in pro-active professional development. It can bring together a wide range of individuals from different cultures, sectors and professional roles, including students, and others from outside higher education turning it into a boundary crossing experience. Furthermore, the framework presents opportunities for academic staff to become part of a diverse cross-institutional learning community that has the potential to live beyond course boundaries, and therefore strengthens relationships among academic staff in different institutions. In addition, the framework may bring value to course designers in other professional areas where the advantages of cross-boundary learning can also be harnessed.

The framework may present potential opportunities to a range of groups, each of which are considered below.

#### ***Academic developers***

Collaborative open learning in cross-institutional settings is an approach for academic developers to consider in their practice that potentially creates a new type of CPD and brings more diverse individuals together. This can be motivational, not just for those participating but also for those co-organising and co-facilitating such a provision. It also presents valuable development for academic developers themselves as such initiatives provide opportunities to work with colleagues and individuals from different institutions, cultures and sectors.

#### ***Academic staff***

It is recommended that academic staff first experience collaborative open learning as a learner and at a later stage take on co-facilitator responsibilities. By experiencing challenges and opportunities first-hand as a learner, they will develop a deeper understanding of what it is like to learn in such an environment and how to support others, before adapting similar approaches into their own practice.

### ***Students in Higher Education***

There is an opportunity for students, especially at postgraduate level, to learn in partnership with academic staff and other professionals from other sectors and cultures, in an environment characterised by horizontal communication and collaboration. Such activities can have a positive effect on students' motivation to learn and study, and increase students' confidence and sense of belonging.

### ***Professionals from other sectors and the public***

This includes those from sectors such as secondary or further education, the voluntary and corporate world and the public more widely, who all have an opportunity to learn and develop within a diverse community with shared interests. Furthermore, it creates connections and opportunities for diverse collaborations, and a link between sectors and the public, which, as this research has shown, is vital for cross-fertilisation of ideas and knowledge creation.

### ***Researchers***

As the framework brings together a range of dimensions and features around collaborative open learning, it may also be a useful starting point for researchers to generate new ideas for further research. Therefore, it could be used as a tool to further explore particular areas of inquiry linked to this.

### ***Limitations of the framework***

Further work is needed to validate this empirical framework. Although it has yet to be formally tested, its potential usefulness in practice has been noted. Following development, the framework was shared with eleven colleagues in a wide range of roles from different parts of the world for open peer review. This strategy is aligned with phenomenographic practice and provides external scrutiny and judgements to be made by the researchers' wider community of the interpretations in the phenomenographic analysis. Their comments support the usefulness of the framework for practice in a range of learning and teaching contexts, within and beyond academic development. At the time of writing this article, the framework is considered by a UNESCO supported project Open Education for a Better World to be used nationally at an Uzbek University in the context of the professional development programme that leads to the re-accreditation of English language academics that has to be taken every three years to address some of the challenges in their current provision (Wahls, Nerantzi & Abidjanov, 2018).

### ***Licensing of the framework***

The release of the framework under a Creative Commons licence (CC BY-NC-SA) enabling adaptations, will encourage others to test the framework, evaluate it and further contribute to the knowledge base around collaborative open learning and open cross-institutional provision. This will be of value for practitioners and the sector more widely. Currently, it has been proposed to be adapted in Uzbekistan for implementation within the professional development accreditation programme for English language teachers in higher education through an UNESCO supported project that is part of the programme Open Education for a better world (Nerantzi, Wahls & Abidjanov, under review).

## Conclusions

The empirical cross-boundary collaborative open learning framework has been designed and developed based on the phenomenographic findings of this study and informed by critical engagement with the literature. The framework dimensions were presented in detail in this article. These are the engagement patterns, learning needs and design considerations. At the heart of the framework are the dynamic engagement patterns, 'immersive' and 'selective' collaboration. These provide insights into the collaborative open learning experience as identified through this phenomenographic study. The learning needs provide a scaffold for learning activities and support that will help learners navigate on their own and with others within open learning and maximise the benefits of collaborative learning depending on their situation, preference and priorities. It is hoped that the framework, will provide a useful guide and design tool to academic developers, learning technologists and course designers interested in introducing, implementing and reviewing collaborative open learning within academic development. The framework may also be of interest in further disciplines and professional areas in an higher education context and open education mode widely and could be considered as a tool for further research around collaborative learning.

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### Appendix 1: Case studies overview

Commonalities of cases	Case studies	Case study 1: FDOL132 University of Salford, Karolinska Institutet and Manchester Met	Case study 2: CreativeHE Manchester Met, London Metropolitan University, University of Macedonia, Creative Academic and Lifewide Education networks
<ul style="list-style-type: none"> <li>Based on academic development courses linked to existing institutional module at postgraduate level in at least one HEI</li> <li>Cross-institutional participation of colleagues from at least two HEIs</li> <li>Collaborative learning as choice</li> <li>Development using freely available social media platforms</li> <li>Openly licensed courses using a CC licence</li> <li>Developed or co-developed by researcher</li> <li>Facilitated by a small group of distributed facilitators from different institution</li> <li>English used as lingua franca</li> </ul>	<b>Duration in weeks</b>	12	8
	<b>Dates</b>	Sep – Dec 2013	Sep – Nov 2015
	<b>Collaborative design characteristics</b>	Optional, in small groups using PBL	Optional, in small groups or pairs using a variety of pedagogical approaches agreed with learners
	<b>Course development</b>	Collaborative: University of Salford and Karolinska Institutet	Manchester Met
	<b>Recognition for open learners</b>	Certificate of participation	Open badges for participation
	<b>Formal study option</b>	At the University of Salford: approved Flexible, Distance and Online learning module at postgraduate level as part of the PgCert in Academic Practice.  At Karolinska Institutet: Part of study towards the accredited development courses 2-weeks or 5-weeks.	At Manchester Met: Part of the Creativity for Learning module, option to also use work towards FLEX 15 or FLEX 30 modules. All three are part of the MA in HE. University of Macedonia: part of MA in Lifelong Learning
	<b>Study linked to further local engagement opportunities</b>	n/a	London Metropolitan University: part of Take5 initiative.
	<b>Languages</b>	English and Swedish	English and Greek

## Appendix 2: The categories of description and their qualitatively different variations

Pool of Meanings	Categories of description	Variations	Codes used in the outcome space (shown in Appendix 3)
5.2 Pool 1: Course	Open learning as course organisation	<ul style="list-style-type: none"> <li>• Causing initial disorientation</li> <li>• Aiding participation</li> </ul>	C1.1
	Open learning as an activity-based experience	<ul style="list-style-type: none"> <li>• Limiting engagement</li> <li>• Fostering engagement</li> </ul>	C1.2
	Open learning as a facilitated experience	<ul style="list-style-type: none"> <li>• Lacking direction and instruction</li> <li>• Directive and controlling</li> <li>• Facilitative and supportive</li> </ul>	C1.3
	Open learning as designed for collaboration	<ul style="list-style-type: none"> <li>• Constraining</li> <li>• Enabling</li> <li>• Empowering</li> </ul>	C1.4
5.3 Pool 2: Boundary crossing	Cross-boundary learning through modes of participation	<ul style="list-style-type: none"> <li>• As a valued informal learning experience</li> <li>• As a valued mixed mode learning experience</li> <li>• As a valued opportunity for recognition</li> </ul>	C2.1
	Cross-boundary learning through time, places and space	<ul style="list-style-type: none"> <li>• As a disconnected experience</li> <li>• As a continuum</li> </ul>	C2.2
	Cross-boundary learning through culture and language	<ul style="list-style-type: none"> <li>• As a barrier</li> <li>• As an enrichment</li> </ul>	C2.3
	Cross-boundary learning through diverse professional contexts	<ul style="list-style-type: none"> <li>• As initial discomfort</li> <li>• As a catalyst</li> </ul>	C2.4
5.4 Pool 3: Collaboration	Collaboration as engagement in learning	<ul style="list-style-type: none"> <li>• Selective</li> <li>• Immersive</li> </ul>	C3.1
	Collaboration as a means to shared product creation	<ul style="list-style-type: none"> <li>• Product-process tension</li> <li>• Fulfilling</li> </ul>	C3.2
	Collaboration as relationship building	<ul style="list-style-type: none"> <li>• Questioning the behaviour of others</li> <li>• Valuing the presence of others</li> </ul>	C3.3

### Appendix 3: The outcome space, final output of the phenomenographic study

